

III. CHALLENGE SPEAKERS

The transcripts from the three challenge speakers are provided below:

“MTS Capacity Problems: Real or Perceived?”

M. John Vickerman
Principal, TransSystems Corporation

My job is an easy one this afternoon – to pose some questions and hopefully all the wisdom and answers will then flow from the esteemed panelists in their views. The topic is "MTS Capacity Problems: Real or Perceived"? Do we really have a problem or not?

My first question is can the U.S. marine terminals really accommodate – I know they are anticipating it – but can they accommodate the future freight flows? What is the magnitude of those flows and is there a pragmatic way they can be handled in an efficient way?

The World Bank tells us that the productive work product output will increase 33% in the next 10 years, running to about \$40 trillion. This is certainly a long-term view and doesn't take into account some of the early or short-term dynamics. But, clearly it is an indicator of the richness and vitality of the world global trades.

If we look at the Asian ports, which are fueling most of the trans-Pacific growth, we see some phenomenal increases just between now and the year 2005, for the North American Pacific Coast, due only to Asian imports. We are looking at

somewhere between 35% and 42% increases in trade.

Let's consider the forecasted demand for the Panama Canal and forecasted transits to the year 2040. If we really look at where we are today and we look at all the variety of vessels moving and transiting the Panama, we see that their growth is somewhere between twofold and fourfold; however, none of those lines decline. In fact, the vessel transits through the Panama are all increasing over time, particularly container vessels. It was the fourth most frequently transited vessel in 1980 and in the year 2040, it will be king.

If we look at the containerized world trade, it has been growing at about 8.5% compounded annually and has not decreased since the inception of the container, and is in fact under the long-term scenarios, will continue at about this rate. By the way, the U.S. growth rate for containers is about 6%, or two-thirds of the global world market growth rate.

If we look at the U.S., we see for nearly every trading and port competitive range, that the growth is between 6-7% compound annually, and what this means is that by the year 2020, every U.S. container port gateway, provided they want to maintain market share, will either double or triple in volume. I've always said that I don't believe it is possible to double or triple the number of berths or terminals to meet this demand. Therefore, at least in my estimation, we're going to have some hard times in terms of accommodating this growth.

An illustration of this using the worst case scenario, assuming that the Asian flu continues, and is steady state, the growth in the combined ports of Los Angeles and Long Beach looks like a quadrupling of trade to the year 2020. Half of it is an intermodal/rail split phenomena. The capacity of the current port is roughly as you see it, which means we have a twofold increase. By some estimates, using the Port of Long Beach as an example, at around the year 2006, the port may be hard-pressed to develop any further marine terminals to suit this demand. This is the lowest, most conservative, worst-case, Asian flu continues, dynamic. I would show you the other one, but it wouldn't fit on the screen.

What are the implications for that? At the current productivity per acre, there is about 3,600 new acres required. I happen to be the project manager on the 2020 plan when 2,500 acres, which is currently under construction now, was conceived of in 1987. This means these port terminals will have to be outside the breakwaters, or somewhere else. A lot of land – a lot of terminals just to meet the conservative dynamic. If we go to the other coasts and we look at New York and New Jersey, specifically at the forecasted demand for containers based on vessel channel dynamics – that being 50-foot channels. The current capacity of the combined ports of New York and New Jersey, including the New York institutions, if we look at a 2040 horizon, we are going to see a fourfold increase. It really doesn't matter whether we have 50-foot channels, 45-foot channels, or we don't do anything about the Kill Van Kull – we leave it the way it is – the growth is up.

This phenomenon on projections is also applicable to the military. If we look at the Army's strategic mobility issues, their desire is to reduce deployment times by about 80% and do it on top of, or in concert with, commercial ports without disruption. If we look at our last war, we had a benevolent opponent who said why don't you just take 180 days and get your logistics together. If we look at the current dynamic, 5 1/3 heavy divisions, about two LMSRs per heavy division, the target goal right now is about 75 days and the Army Chief of Staff believes that has to be done in 30 days. There are some proponents of this that indicate it needs to be below the 30 mark. If we couple just the general merchandise container traffic illustrated earlier, plus all the neobulk, breakbulk, liquid bulk, and a variety of others, and on top of that, put a military movement on top of our preauthorized load-out ports, we have a substantial task in front of us.

Can the U.S. ports handle the continuing growth of vessels? Here again, I'll use the container vessel as an illustration and the shore-side demands that new vessel configuration will have on our ports. If we look just last year at the major alliances, the five major alliances shown in white, and we look at all of the vessel ordering, and this was to about June last year when we were still in fairly positive economic times, before the recent turn-down occurred, you can see at the bottom here that about 147 vessels with a capacity of nearly 700,000 TEUs were put into place or ordered. This is a 28% increase among all of the global alliances worldwide. This is a significant ship order placement.

Although some of those carriers have withdrawn the orders because of the economic as well as the recent events in September, it is still a daunting task. Despite very low financial returns, the liner industry continues to build bigger vessels. If we look at China Shipping's order of 9,800 20-foot equivalent units exceeding the largest vessel afloat by 2,000 TEUs in the year 2004 delivery, gives us an indication of the wave to come, although it may be mitigated or moderated because of the recent events.

We look at shipyards and what they are currently planning for. They are looking at about a 9,000 TEU jumbo vessel, propelled by a 93,000 hp engine, the largest low-speed diesel engine ever created in the world, and has drafts of approximately 48 feet. This 48 feet, plus two feet of under-keel clearance and two feet of vertical ship movement (something we affectionately refer to as squat) would mean that we need more than 50-foot channels in most of our strategic ports – a phenomenon that does not exist today.

Back in the 1970's, a very important guide to planning ports said you shouldn't anticipate a vessel being larger than 3,200 TEUs. The reality today is 6,000 – 8,000 TEUs, and the long-term possibilities is 10,000 – 15,000 TEUs, and we are approaching the 10,000 TEU threshold as we speak.

Is there a larger vessel out there? Several companies, including a German shipyard, have indicated this vessel is possible. It has a beam of 226 feet. If I plot the Miraflores Lock in the Panama Canal, the maximum through the lock – 13 containers wide. This vessel has 28. This is a significant issue. You might

note the draft has gone down a bit – a very famous naval architect by the name of Archimedes, indicated that the displacement draft for a vessel is only a function of displaced water, and as you get wider and longer, we actually have a depression on the draft requirements.

If you take a 10,000-foot vessel, you balance imports and exports, and you use a 75% intermodal split, which many of the modern West Coast terminals are doing today, you end up getting about 13.5 – 10,000-foot long unit trains in and out every vessel call. It generates about 6,000 units and 26 trains two miles long for every vessel call. If we look at their requirements on the apron and we look at the congestion on the gate, the picture of the newest marine terminal in Los Angeles (APL's Pier 300), we see there is a peaking characteristic on the wharf, as well as at the gate, and with the megaships and the offload and the evolution of ships, it causes us quite a bit of concern. Can we accommodate this requirement with the current capacities in the port?

Let's talk a little bit about the cruise sector. Lauren Kotas is on the panel, and in her own right, an expert in the cruise market. The question there is will the changing vessel requirements in the cruise industry change U.S. port facilities? We certainly know that the terrorism issues have changed the dynamics, and in fact, have certainly reduced dramatically the patronage of cruise in the Mediterranean with a streaking-out of that region toward U.S. domestic markets for cruise potential.

Let's take a look then at some of the venues here. One of the largest vessels afloat, nearly 5,000 aboard this

particular vessel, uses Azipod propulsion, electric pulser drives, and is a very large vessel. In fact, it is the traditional hallmark of hubbing for cruise activities. If we look at a recent project that the Port Everglades complex has looked at, it is looking at investing \$500 million in its recently completed strategic plan to accommodate on-ground passengers of 75,000 at peak flows. This is the concept for a simultaneous loaded discharge of nine Eagle class vessels at peak cruise day, assuming that the cruise lines will not adjust or will not accommodate variants or widening of their vessel deployment schedules away from the weekend. There is also an emerging mini-cruise market and expeditionary market with smaller vessels, all exterior bunks or cabins and lowers, and is a popular emerging new trend.

What is the U.S. productivity and our capability? If we look at the late 90's and we look at our ports and measure it in 20-foot equivalent units per acre per year, we see that the West Coast ports, primarily because of intermodal load-outs, are substantially higher than the East Coast. The average is about 2,100 TEUs, Europeans being about 3,000 TEUs and the Asian ports at about 9,000 TEUs. That is average. There have been some major developments in that regard and using Jim Brennan's recent analysis on high transshipment ports, that is mother-ship to feeder or barge, if we look at that dynamic, we see the U.S. ports non-transshipments to other ports, or at least transshipment is not a specific major issue. If we look at the world ports with transshipment, we see there is actually an increase of 400% in the throughput capacity capability of the very best terminals we have in the

United States compared to transshipment focused, intelligent transport operations using transshipment modes. Perhaps what was intermodal yesterday might be termed transshipment tomorrow.

Landside access demands continue to increase. Using the latest FHWA freight framework analysis and looking at the 2020 truck flows using incremental increases above today's volumes, we have significant flows, particularly trucks from NAFTA – both Canada and Mexico. We have the unique capability now to run it by value, by port of entry, and we can even look at narrowing choke points within the system using this database.

If we look at rail traffic, we see a substantial increase potential there of about 48%, associated with tonnage on the railroads. We know the railroads have historically been moving east/west on the double-stack container network. In the last couple of years, we have had some emerging north/south corridors that will drive trade deeper into our heartland. The NS/CSX split, CN/IC's \$3.0 billion merger, and in fact, CN/IC's recent acquisition of WC of about \$1.5 billion, for a total investment over the last five years of \$5.0 billion, is a substantial artery connection to our major ports of entry. All we can judge from that is it is going to get really congested out there, not only at our ports, but around and the hinterland and the landside access that is associated with it.

Are there prospects or are there things that could mitigate this? Are there issues that can help us solve this? Clearly, some of the research that our panelists will talk to us about today will

tell us that perhaps there are some technologies out there. I happen to be one that believes in information technology as a major empowering element for shortfalls in port capacity. The real question that most shippers have is where the heck is my cargo. I really don't care how it gets there – train, truck, ship – just get it to the consumption zone intact, good quality, just-in-time, with value and perception of quality service as needed. The rest of the logistics is really unimportant other than that last activity.

If we look at the railroads and the maritime interests and the trucking interests, they have developed over the last couple of years multi-carrier, neutral information tracking platforms that allows us to see freight data, with high fidelity, through legacy systems from origin to destination. They offer, in fact, secure internet capability in that transaction, and we are now seeing at least the beginnings of a nucleus of private sector offering the ability to control and move cargo. We all know in the container industry that the most frequently moved commodity in a container is air. We believe then that better resource management through information might help the capacity issues in our ports.

The Port Authority of New York/New Jersey's freight information real-time system for transport (FIRST), which America Systems, Inc. has put together, is one of those real-time, web-enabled information platforms that will allow for a variety of capabilities directly to not only the shipper, but the carrier and the various elements using through legacy system information transmission. We do know from that if we can have

consistent, accurate, real-time CONUS data from both the ship and the train, that for the first time in our country we will be able to effectively use that information to increase capacity at the node, at the port. We believe there are major terminal benefits in that regard.

In another session, you will see some technology that relates to agile port IT technologies that take this a step further, and in fact, has looked at increasing terminal capacity by nearly 200% without building anything through the better use of information, reducing terminal congestion, fewer equipment needs, and reduced acreage as well as reduction in port access. The concept of taking empties to a remote inland site has also been experimented with and will be a tool to help our ports be more productive.

Lastly, let's look at the inland side of the equation. In my view at least, there is an emerging viable feeder service, both coastwise as well as inland intermodal barge services. There are many members in the audience who are actively involved in current coastwise trade and transport. There is, in fact, a growing belief that the mother ship to feeder vessel or barge, and the return of the mother ship back for reloading, will in fact improve the economies of the mainline carriers if, in fact, there is hub-and-spoke coastwise inland intermodal service issues. But, the demise of container-on-barge particularly has always been the long transit distances, the inability to provide consistent scheduling and frequency when needed to meet just-in-time requirements. Those constraints are coming away from the system and, in fact, we see an emerging viable opportunity here. One

illustration actually has a pre-committed doublestacked train that would allow feeder services and cross-river services for multimodal capability.

With that, I will just tell you that it is, in fact in my opinion, that what we have here is a real dilemma and if we are not careful about how we judiciously commit to improvements in our port and marine facilities, we will, in fact, deleteriously affect the trading capability and the logistics behind our entire infrastructure. Thank you very much.

“Maritime Data for the 21st Century”

Dr. Ashish Sen
Director, Bureau of Transportation
Statistics

I’m delighted to be here. My acknowledgements to Admiral Pluta, the Chairman of the Interagency Committee for the Marine Transportation System, representatives of the MTS National Advisory Council, General Robert Griffin from the Corps of Engineers and our host for this event, and Bruce Parker, Chair of the MTS Research and Technology Subcommittee. I think you’re doing great work to increase the awareness and importance of our maritime system. I don’t think it is a big secret that much more attention should be paid to our maritime system.

Speaking on behalf of BTS, I would like to pledge to work with the maritime community to get more statistics out there to demonstrate the importance of the MTS. One way to bring prominence to anything, to bring focus to it, is to get more numbers in it. We can all provide examples of where once you measure

something, people suddenly start paying attention to it. There is a saying within the USDOT – it used to be posted on the wall of the Assistant Secretary for Budget and a lot of people have claimed authorship for it: “What gets measured gets funded.” I think what gets measured also gets noticed.

The events of September 11th increased attention to the need for decision-makers to know as much as possible about the system they review and to improve security. Maritime security is a critical element of the new world we found ourselves in on September 11th. President Bush said we are in a two-front war and one front is the home front. As Transportation Secretary Norm Minetta said, we have entered a new era in transportation. He called for us to re-think the basic approach with which we will provide for the safety and security of America’s transportation system. Timely, accurate and reliable data are critical for decisions in maritime security, just as for other aspects of the transportation system. BTS is charged with improving the quality of transportation data, both within DOT and throughout the entire transportation community. It is our strong belief that making better data available to decision-makers will lead to more informed decisions.

We are actively pursuing the BTS mission of becoming the knowledge base for the marine transportation system. We intend to work as partners with the entire maritime community – port operators, maritime agencies at all level of government, as well as transporters, shippers and the private sector, to identify the data and needs of the 21st century. We intend, in

partnership, to identify data gaps to collect essential data that are not being collected today and disseminate them widely.

BTS engages in a wide range of transportation data activities. We publish yearly updates of statistics such as the Transportation Statistics Annual Report. The latest volume will be coming out in a new format in a few days and you might find that interesting. For those of you who have seen previous ones, this one looks like a compilation of briefing papers. It was a very quick way to get a sense of where things are. This publication is fairly widely read on Capitol Hill and, in fact, people there found out in 1997 for the first time that China displaced U.S. in the world's leader in container traffic.

BTS also publishes the National Transportation Statistics – a compilation that allows cross-modal comparisons. It is a useful volume to have on your shelf. In the current issue, you will find that more than one-quarter of the crude oil in petroleum products transported in the U.S. moves on water with comparisons to other modes. BTS also operates the National Transportation Library, which is a virtual library of transportation documents on which I feel we have made significant progress. You can access somewhere between one-half million to one million abstracts on all fronts, and a lot of full text documents. It is just about to move from what you might call a prototype to a real thing, and I encourage you to take a look and accessing it through the BTS website.

BTS also performs surveys on many transportation issues. Probably our best-known survey is the aviation delay

statistics and currently probably our most useful survey. It is also one that gave me a lot of grief in recent days while trying to find a way to distribute the \$5 billion in airline support following September 11. How to distribute it and what formula should be used requires making certain the numbers are correct. Where money is involved, data quality becomes even more important.

Earlier this year, BTS joined with the Maritime Administration to conduct a survey of mariners on the readiness of merchant mariners to sail on large oceangoing vessels. I am happy to report that two-thirds of the mariners, many of whom are in shore jobs now, would be willing to take an afloat position in the event of a national defense emergency. In fact, one of those numbers from this survey has had a lot of play recently in discussions with Captain William Schubert, our new MARAD administrator.

Every month, BTS releases the transportation indicators and updates more than 90 transportation databases. In October, we reported that the cost to industry of providing water transportation services increased 11% from September of the previous year, which I think is quite striking to think of all the economic consequences of it.

In 10 years, BTS has accomplished a great deal. Even during my three years as director, we have moved forward in many initiatives and many of these have been to improve the quality of data for our marine transportation system. One of our most exciting advances took place in May when we unveiled one-stop shopping for transportation data through

the Intermodal Transportation Database. In the near future, we will have close to 100 databases available for downloading, whether directly from the BTS site, or through links to other sites. In fact, if you call the first version Version 1, we are sort of in the decimal places now. In January, we will have Version 2 and we are putting a lot of effort into it. The whole idea is that if data are easy to find, more people will use it. If the full data set is available, then more people will analyze it and we will get more understanding from it. Ultimately any transportation data will be in this one database portal, however it is configured. Right now we see it as basically a database.

At present, you can go there and you find a fair amount of data on Maritime Administration's activities and the U.S. Coast Guard data. You will find information on vessel casualties, vessel entrances and clearances, and you will find links to other websites like the Army Corps of Engineers, which also has a lot of very good data. There will be more in the near future. We are trying to get domestic and international vessel data to link with various trade data. Our goal is to make the data easy to get and the hope is that if it is easy to get, more people will analyze it and as more people analyze it, we will learn more from it and we will all do a lot better.

The international trade database (ITDB) typifies BTS' role of cutting across modal distinctions to improve data quality comparability and dissemination. We know there is more to do to improve the quality of maritime data and with better information, decision-makers will be able to focus their efforts on solutions

that have the best chance of success. We want to improve the data by partnering with everyone involved in the marine transportation systems. The whole thrust of what we plan to do is to work with others. Even if BTS could do it alone, we should not. We need to do all of these things together.

I mentioned that we are moving to upgrade existing data quality, fill data gaps and develop methods to make better use of data. We sponsor the maritime data group where BTS joins five other federal agencies to review and coordinate maritime data related activities. The group is updating maritime trade and transportation '99, a comprehensive analytical work on maritime trade and transportation in the U.S. The update will include new sections on the St. Lawrence Seaway and on maritime transportation and the environment.

We are also expanding the maritime use of our geographic information systems (GIS) capability. We are in charge of the transportation layer for the national GIS system. We are working with MARAD to develop a program to analyze the maritime trade patterns of Honduras and Nicaragua. We plan to begin using the system in Central America in December and to have it ready for use in this country by spring 2002. Our mapping capability will enable us to better analyze and improve the understanding of maritime cargo trade patterns. By matching capacity with utilization, this too can help with future investment decisions.

Another activity, not directly related, but also of importance and interest to this group is something that we're just

beginning to develop. We're going to call it the AFS, which originally referred to the "Ambitious Freight Survey", but is now the American Freight Survey, now that we are a little more modest. It is a survey of freight and, in general, the challenge we face is designing a freight data system that will be the most useful there is. I would like this to be a fairly frequent survey with a great deal of geographical detail, wide coverage and also able to measure performance, for example, how long does it take to go from true point of origin to ship. I would invite this group to work with us in designing this system so that the data are of the greatest value for everyone in this group.

BTS is also engaged in a major effort to identify data gaps. We could use help on that from the marine community. We are collecting information on gaps in transportation data that keep the transportation community from making the best informed decisions. For example, we have no database on cargo theft at seaports. This is being looked at by a number of people, but we need to do something with it. We don't have good origin and destination and route data for freight, and hopefully the freight project I just mentioned can handle it. We don't have integrated data on routes, content and quantity of hazmat shipments. Again, the American Freight Survey I hope will be able to handle it. In addition, there are many gaps about the movement of passengers on ferries and cruise ships.

If you think about it, if a gap is acknowledged, then in a sense it ceases to be a gap. Finding gaps is a difficult task, because basically you may be trying to determine what you didn't

think about before and that is very difficult. This is one area where BTS particularly needs your help and that is one of the challenges I'm going to push you on – to work with us and tell us what data are needed or desired but not being gathered.

Many times I think we may not notice phenomenon simply because we have no information on it, or not enough information on it. We need to think about what information we need and maybe that will trigger the activities to fill those gaps. You can join the data gap project through our website at www.bts.gov. Tell us about data gaps you think we should be filling. Tell us how we should fill them. Tell us why we should do it and how it fits into a broader picture. We will try to take it from there and involve you as we go forward. The final report on data gaps is due in the spring of 2002 and it is essential to ensure that maritime issues are covered.

I also ask you to consider how BTS can join with the maritime community to support maritime-related intelligent transportation systems research. I thought the maritime industry was quite far ahead in intelligent transportation systems (although ITS is largely a "surface" term); for example, my impression has been that the maritime industry has been using GPS a lot longer than the surface modes.

There is a need for many standard measures for investment decisions. Because of BTS' unique data role in the transportation community, we can help with the creation of ITS data standards. We bring a national perspective to the table, along with our expertise in data. I

hope in the coming days and weeks to discuss BTS' role in ITS data and research with the maritime community. As in all our efforts, it must be a partnership. By working together, we will produce higher quality data that can lead to a safer, more secure, and more productive transportation system.

Data are the light of an enlightened policy. As we fulfill this mission, we are affecting our transportation policies and making transportation better, improving our lives and future generations. Taken together, this is an ambitious undertaking. But, as that great Chicagoan, Daniel Burnham said (and I believe every word that he said): "Make no little plans. They have no magic to stir men's blood and probably themselves will not be realized. Make big plans, aim high in hope and walk." I think we need to aim high and let's see how far we can take these ideas. Thank you.

"Linking the Pieces: Developing an Integrated and Secure North American Freight Transport System"

Harry Caldwell
Chief of Freight Policy, Federal Highway Administration

Congratulations to the people who put together this conference. This is a great collaboration among research and development interest groups for the MTS, including those who are interested in the development of SEA-21 and those of us who are more directly concerned with surface transportation issues, and the reauthorization of TEA-21. I'm going to talk today about some technical

issues, but then segue into broader policy considerations on finance and program options as we move into reauthorization.

By way of background, we created a freight office in the Federal Highway Administration in January 2000 as part of our headquarters restructuring. It is the first time in the history of the Federal Highway Administration, dating back to 1917, that there has actually been an office set up to advocate on behalf of freight. It is also the first time any mission statement within the FHWA organizational structure has, as its operative verb, "advocate". That is our job – to advocate on behalf of freight interests and that is what we do.

It has been a productive working relationship in DOT. We function as a one DOT organization, and are proud to be able to work with MARAD, the US Coast Guard, FAA, FRA, the Federal Motor Carrier Safety Administration, and the Secretary's Office of Intermodalism.

This cycle of reauthorization is going to be a challenge. TEA-21 was a 40% increase over ISTEA authorization levels, and there is some concern that with competing demands on the Federal budget and the increasing focus on national security, the question is – are we going to have that amount of discretionary budget capability as part of reauthorization?

Our needs are great in all modes of transportation – the MTS as well as highways and rail -- and our story is a very important one to share with Congress. I'm going to focus on two challenges – one technical and one more

policy-oriented, as we work to tell the story of freight mobility more effectively in the halls of Congress, as well as in Ottawa and Mexico City, our NAFTA trading partners.

This is a slide that many of you have seen before. This is a picture of tremendous success. The U.S. freight transportation system is a multi-modal system providing ready access and superior service to most shippers delivering goods in a cost-effective and environmentally sensitive manner. As the slide illustrates, logistics as a share of GDP has declined steadily since the early 1980's, with the Staggers Act and some of the other deregulation efforts that began about that time.

In a recent article, the Journal of Commerce estimates that this reduction in logistics expenditures has saved the average American household roughly \$1,000 a year since the early 80's. Every unnecessary dollar squeezed out of logistics cost is an additional dollar for upgrading plant equipment, for worker training and re-training, for basic and applied research and development, and increased equity share value for companies. Our concern is that this percentage bottomed out at about 9.9% two years ago, and has been inching steadily upward since then. It now stands at about 10.3%. The system is showing signs of strain, and it is being felt by all the modes of freight transport.

All modes of transportation are important in the U.S. economy. Trucking dominates, if you look at both domestic and international trade. If you look at international trade only, waterborne commerce dominates. Waterborne commerce, as you well

know, is an important component of both international and domestic movement. It services 41 states, reaching 90% of the U.S. population with waterborne transportation. It carried over 1.1 billion short tons of cargo, 23% of ton miles of all domestic service traffic, and it contributes significantly to GDP.

I'm going to show you some images now that are part of what we call the Freight Analysis Framework. These images are all available on CD and I'll tell you how to get one at the end of this presentation. We cannot post these images on our Website for security reasons. But, if you will send me a message through e-mail, we will be happy to put a copy of this in the mail to you.

This shows domestic waterborne commerce, not only coastal shipping but the Gulf and Ohio River systems as well. This is just one state – Louisiana – domestic water flows. We have graphics like this for all 50 states prepared for 1998.

If you look at international cargo, you can see the importance of coastal shipping, which is what this panel will address this morning. Coastal shipping on both the west and the east coast and the inland waterway system is an important option for intermodal freight, particularly in some of the congested ports of entry that are going to become more congested if you consider the trade forecasts.

This is an example of international freight moving into and out of the Port of Charleston. It illustrates the relationship of water transportation

connecting to the inland gathering and distribution system of highways and railroads. This happens to be the Port of Jacksonville. Again, this kind of imagery is all contained on the CD-ROM. We've mapped the largest international ports of entry rail flows, as well as highway flows. We've mapped the 30 largest BEA regions, all 50 states, and we're working on air freight facilities right now. All of that should be completed within the next two weeks – right after the Thanksgiving holiday.

Gateways are a critical interest in the United States economy. They connect the U.S. to our NAFTA trade partners and to the rest of the world. They are critical to the future viability and functionality of the intermodal freight system. Our ability to map these things is an essential building block for a comprehensive analytical system to better understand the system, its interrelationships and investment options. We are now working with Canada and Mexico to extend this capability throughout North America. This capability will allow us to graphically illustrate the importance of gateways and long distance trade corridors, and will also allow us to engage in transport development discussions more fully with our NAFTA partners than we have had the opportunity to in the past. This comprehensive data and analytical capability is the technical challenge that I will discuss today – building a multi-modal investment performance system and a strategic planning analysis network to inform decision-makers at all levels.

By the way, gateways will likely be one of the major program areas that we will

emphasize in reauthorization because of tremendous population growth as well as the trade growth that are going to impact our gateways. Gateways tend to be a free rider problem, as an economist would describe it. The costs of international trade are borne locally, but the benefits are widely distributed throughout the country of North America. It makes it problematic to invest in gateways because of this distribution of benefits and costs. But, there are ways we can address that.

This schematic diagram is a wonderful illustration for governors and state DOT officials. This slide compares the value of a specific sector of international trade – not all trade. This is the merchandise sector, but it illustrates very well the rapid growth and importance of trade in the U.S. and world commerce. The U.S. has traditionally not been an international trading nation, but as you can see from the green bars, we have dramatically increased from 1970 to 1997. If you look at our trade forecasts produced by WEFA (the Wharton Econometric Forecasting Group), U.S. trade as a share of GDP is expected to increase to as much as 35% by the year 2020, and a great deal of that will be waterborne commerce.

Globalization is a theme that concerns many groups concerned with labor issues, environmental issues, and cultural issues. But globalization is a phenomenon that is likely to continue. The market demands it and trade provides economic opportunities that would simply be absent without globalization. Our ability to understand the transportation implications of globalization and sourcing changes, and our ability to explain these changes and

their applications to decision-makers is absolutely critical. Currently, we do not have the tools to do this, and we need to develop them.

I mentioned our WEFA forecast – WEFA looks at rest of world, looks at NAFTA, looks at domestic freight and comes up with trade forecasts for 2010 and 2020. As you can see, cumulative we are expecting about a doubling in trade flow between now and 2020, with a disproportionate increase in international trade.

This graphic always gives state DOT directors cause for concern. This is the delta, or change, between 1998 and 2020 for commercial truck traffic – not including rail and waterway. Look at that degree of density. This is particularly interesting to waterborne interest groups. This is overseas inland trade, truck traffic coming in through our major ports. Look at the major corridors illustrated by a graphic like this. In our trade with Canada, the largest crossing between the U.S. and Canada is the Ambassador Bridge in Detroit. It carries more trade value than the entire U.S./Mexican border.

The most highly congested highway in North America is the 401 in Ontario, the trade corridor between Toronto and Detroit and extending over to Chicago. It carries 400,000 vehicles per day and is the most significant trade corridor in the entire world. The trading relationship between Ontario and Michigan is the largest trading relationship by value of any two political jurisdictions in the world.

Canada trades with the U.S. 39 times more than it does with Japan, its second

largest trading partner. September 11th has resulted in a tremendous hit on the Canadian economy. Trucking has rebounded, but companies are changing their sourcing patterns, JIT levels, and holding more inventory in anticipation of potential future disruptions. Auto traffic across the U.S./Canadian border since September 11th is down 35%. Developing an analytical system to assess options for facilitating trade across the board, while providing for national security, is another essential element of an analytical process that we will talk about today.

This is U.S./Mexico truck traffic on the U.S. network in the year 2020. Mexico is our number two trading partner. Free trade in the Americas will further spur Latin American trade and growth in traffic. For both Mexico and the areas typically noted in a discussion of a Free Trade of the Americas area, the Gulf ports are extremely important components in supporting that growth. SASHTO (the Southeastern Association of State Highway and Transportation Officials), recently completed phase one of what is called the LATTS study (Latin American Trade & Transportation). The study assesses the Gulf ports and the Florida ports, looking at their capacity for accommodating expected Latin American trade.

The network is dense and well developed, but it is showing signs of stress. Between 1978 and 1990, the ratio of highway travel demand to new lane miles of capacity on our highway system was about 12 to 1. As a result, we are seeing increasing traffic density in are sizes of cities, particularly larger urbanized areas, and particularly on highway types of highway, our limited

access facilities. Rails cannot cover their cost of capital, resulting in branch line abandonments and rail mergers. Rails reinvest about 20% of after-tax revenues, compared to about 5% as the nation's average. They are doing a good job of trying to maintain plant and equipment, but they simply are not obtaining enough revenues to cover their cost of capital.

Regarding ports, NAFTA trade is increasing and there is a lot stress on border crossings. There are very poor intermodal connections. We completed an assessment of the National Highway System freight connectors in December 2000. The port connectors across the board show pavement conditions that are roughly twice as bad on the rest of the NHS. Most of those connectors are located in older, mixed-up industrial areas and port complexes and carry primarily truck traffic, with little non-commercial traffic.

There is a lack of interoperability across modes and, among the NAFTA partners, EDI systems are stovepiped. The U.S. just reached an agreement with Canada and Mexico to develop a tri-national ITS freight architecture to help overcome this problem. As a result of the events of September 11th, trade facilitation is now pitted against national security. If you just look at one of the port gateways, the San Pedro ports of Los Angeles and Long Beach, they expect to see a quadrupling of freight flow by the year 2020 and over that same timeframe and geographic area, they expect to add a population component equivalent to three cities the size of Chicago. The challenges of moving that much freight in a highly congested and

environmentally sensitive region will be enormous.

How are we dealing with these stresses? Well, not very well. Freight and intermodalism are tough for the federal 3-C transportation planning process, which has been in place since the mid-1960s. It is a wonderful planning process for developing systems. It is not a very good planning process for responding to operational changes and shorter range decision making. The time horizon differential between the public and private sector is something we will address in reauthorization.

We talk a lot about intermodalism, but we don't provide the technical assistance to the states and MPOs. It is very tough to get intermodal funding for projects involving waterways or rails out of the highway trust fund. We have made some inroads in that direction, through redefinition and interpretation of eligibility, and we will continue to make some more. Part of the reason is that we don't have the ability to think or analyze beyond our modal stovepipes. We tell the states and the MPOs to think and act intermodally, but we give them very little direction on how to do that. We won't be able to chart an effective intermodal course to the future until we can define what we have – how well is the intermodal system performing? We need to be able to define the relationship between past and future investments in performance, and be able to tell Congress.... you gave us money and this is what we did with the money, and this is how the performance changed. We need to be able to relate investment to transport performance and transport performance to national well-being.

I've dealt with Office of Management and Budget and have good friends over there, and the OMB has been focused on balancing the budget throughout the entire decade of the 90's. It is very difficult for them to differentiate between current spending and investment strategies. To them, a dollar is a dollar. Occasionally, our role at DOT in supporting economic growth and trade and productivity is questioned. I expect it is hard for people in this room to believe, but that is the point of view of some members of the budget community. An expanded ability to relate our budgets to national economic wellbeing is essential as we work cooperatively to compete for limited public resources. We have been working in that direction for some time within the highway community, and the marine community is investigating how to do the same on the waterside. That is a tremendous step in the right direction.

Second, we need to define the necessary coordination of parallel initiatives with trade facilitation and national security. It is one thing to build infrastructure to our ports and to our border crossings, but if it is not well coordinated with Customs and GSA and INS and the other trade facilitation agencies, then we have simply substituted one roadblock for another. More specifically, we need to be prepared to describe the performance characteristics and their changes, not by mode, but across the entire system. This is something the European Union is working on with some success.

We have to be prepared to describe the relationship between public and private capital and operating investment and system performance by mode and across mode. That is what an investment

performance system is all about. To do that, we need to begin developing – and this is my challenge for you today – a multi-modal investment performance system to help understand and address these questions.

This is an example of the beginnings of an investment performance system, looking at the highway system. I showed you the demand maps. This is an overlay of demand with capacity. This shows the highway segments that have traffic volumes greater than 100,000 vehicles per day, and truck volumes greater than 10,000 vehicles per day. Having this kind of capability allows one to map demand against capacity, define potential choke points, begin to look at intermodal rail and water options to mitigate these problems, assess the benefit cost of alternative actions, and then coordinate the development of multi-jurisdictional approaches to program improvements in a logical and consistent manner.

A multi-modal investment performance system (MMIPS) can find not only where existing problems are, but where problems might be developing. VSF is volume to service flow. It is the old V/C ratio that some of you may be familiar with. A VSF of greater than one theoretically is at capacity. A VSF of 0.8 to 1.0 is like a shadow on your x-rays when you go to the doctor. It is a problem that is developing and we need to begin worrying about it. The reason is that increasingly a lot of U.S. trade is high value-added – it is very time-sensitive trade. When you get to a VSF of .8 to 1.0, system reliability begins to diminish dramatically. When you don't have good system reliability, shippers

have to hold more inventory as a buffer against a system breakdown.

Detroit, Michigan and Windsor, Ontario are the home of the U.S./Canadian auto industry. A lot of parts shipments go back and forth across the border into assembly plants of the “Big Three”. One of the “Big Three” charges drayage operators crossing the border \$5,000 per minute for delay – each truck, \$5,000 per minute. That is the degree of reliability that is expected from their supporting transportation system. MMIPS can allow you to begin relating changes in your system performance to what you need.

Today’s technical challenge is to establish the need or framework for an integrated North American freight data and analytical capability. We need to begin thinking through the pieces that we need to link together or begin developing, that will allow us to move toward the concept of a multi-modal investment performance system. The ICMTS is moving in that direction. They are actually letting a statement of work to develop a needs capability for the maritime industry. That is a huge step in the right direction.

There is a group called MAROPS – the Mid-Atlantic Rail Operations program, which involves CSX, Norfolk Southern and Amtrak, with several state DOTs. It is a wonderful partnership looking at identifying choke points in the Mid-Atlantic area for rail. We are beginning to think through how the railroads could provide an information system that would allow them and us, in cooperation, to define those choke points and investment options and trade-offs.

This is a big step for the railroads since they are privately owned.

FHWA and the Federal Transit Administration had been moving in this direction for several years with the combined Conditions and Performance Report. There is a group set up by U.S. Customs called the Border Station Partnership Council, which includes all the Federal Inspection Services, FHWA, and Federal Motor Carrier Safety Administration. That group is sponsoring the development of Border Wizard, which allows us to look at the relationship between transportation connections in port of entry operations. We currently have an operating model that can be used to simulate movement at land crossings with Mexico and Canada. We are just now beginning to develop a Canadian version of this. By the end of 2001, we will have the capability at three locations – Blaine on the Pac Highway between Washington and British Columbia, Champlain on I-87 south from Montreal, and Ambassador Bridge in Detroit – to display a port of entry showing the current customs and immigration practices and procedures of the U.S. going northbound and Canada coming southbound. We will have an integrated tool that enables those federal inspection services on both sides of the border and the transportation agencies that build and operate the infrastructure connecting the port of entry, to look at investment strategies, operating strategies, and personnel strategies to improve that port of entry. It would not take much to adapt that to a marine environment. Then we would begin having a true multi-modal investment performance strategy.

System analysis isn't only about modal and intermodal investment. Given a trade corridor, a system like this can help define which corridors and gateways are most critical and are of most regional and national significance. It can help you talk about what is the most effective modal balance. It can help you talk about what sort of trade facilitation facilities need to be provided for Customs, trade, security, cargo and passenger inspection and clearance. When I talked to RADM Bob North (USCG) about this last year, he immediately understood how this would enable him to calculate resource requirements for each port of entry, cutters, aids to navigation, so on. You would be able to define the magnitude of demand at a port of entry and translate that demand into support services – whether it is personnel, aids to navigation, dredging, you name it. All that capability could be built into this.

Other building blocks include the highway marginal benefit cost procedure that we use to estimate needs for U.S. Congress. I mentioned that MARAD and Coast Guard are now letting a contract to look at an investment performance system for waterways. I also want to mention that the Mexican Transport Institute, with whom we met in Brownsville in September to talk about the development of this capability between the U.S. and Mexico. Mexico has an enormous analytical capacity that we have not yet accessed, including land, rail and water. Last week I was in Toronto talking to the Canadians about the same thing.

On the policy side, there are also tools that can help us understand the problem that we face in the future.

Understanding the problem can help us define the strategy. The strategy can help us define the program needs. The program needs can be conveyed through common message sets. Then the message sets can be orchestrated to convey consistency, comprehensiveness and coordination to the U.S. Congress – a very persuasive method.

The other challenge I would like to leave with you today is policy coordination. I believe we must coordinate message development for freight productivity and national security. In all cases, our legitimate needs by any modal definition exceed available revenues.

Cannibalizing one mode, pitting one against another, or borrowing from Peter to pay Paul simply won't get the job done. We need to go to Congress in tandem, in a cooperative arrangement, to offer options and solutions, not simply a litany of problems. I think it is important for us to develop common message sets for all modes and all interest groups. We have talked in terms of single modes for too long. We have talked about the highway mode. We have talked about the water mode and all the other individual modes. With budget constraints and widespread needs and a Congress faced with competing demands and pervasive national concern for safety and security, we can no longer afford to talk about individual modes in isolation. We must talk about how we can use all of our skills and national resources to meet the challenges of trade and security across the entire transportation system.

In summary, we need a comprehensive data analysis system, a multi-modal investment performance system linked to related transportation support tools, and a strategic planning analysis network

that will allow us to begin thinking intermodally. With these tools, we can develop common message sets to deliver a coordinated and comprehensive message. Intermodal trade transport is an investment in the nation's future, and essential for economic growth and continental security.

Something I keep in mind all the time is that "leaders do the right thing; managers do the thing right". We need both – those who can point the way and those who can plot the course. This group is key in helping make that happen. Thank you.